

Reaching for Resilience

A photograph showing a dilapidated, pink-painted wooden building with a corrugated metal roof. The building appears to be in a state of significant disrepair, with missing sections of siding and a partially collapsed roof. In the foreground, there is a large pile of debris, including twisted metal and wood. To the right, laundry is hanging on a line. The background is filled with dense, lush green trees, suggesting a rural or forested area. The overall scene conveys a sense of hardship and the need for resilience.

Dr David C. Smith,
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Cyclone tracks



Historical Hurricane Tracks

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Search

Location: or

Show search area of 100

Refine Search

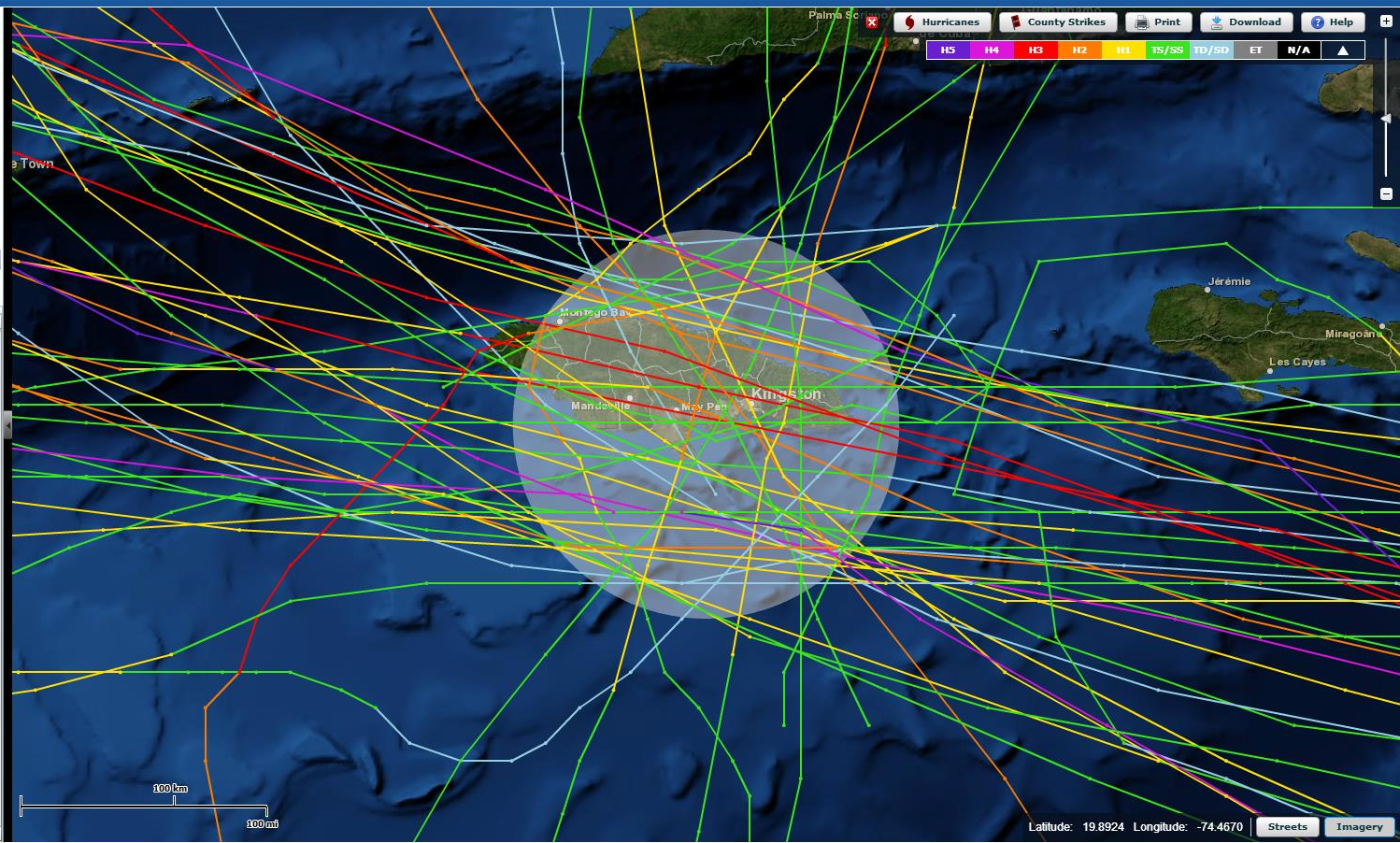
Category: Timeframe: Pressure:

Auto-apply

Search Results (52) Selected Storm My Storms (0)

Sort by

<input type="checkbox"/>	OLGA 2007
<input type="checkbox"/>	Dec. 10, 2007 to Dec. 16, 2007
<input type="checkbox"/>	DEAN 2007
<input type="checkbox"/>	Aug. 13, 2007 to Aug. 22, 2007
<input type="checkbox"/>	IVAN 2004
<input type="checkbox"/>	Sep. 2, 2004 to Sep. 24, 2004
<input type="checkbox"/>	BONNIE 2004
<input type="checkbox"/>	Aug. 3, 2004 to Aug. 13, 2004
<input type="checkbox"/>	CHARLEY 2004
<input type="checkbox"/>	Aug. 9, 2004 to Aug. 15, 2004
<input type="checkbox"/>	LILI 2002
<input type="checkbox"/>	Sep. 21, 2002 to Oct. 4, 2002
<input type="checkbox"/>	IRIS 2001
<input type="checkbox"/>	Oct. 4, 2001 to Oct. 9, 2001
<input type="checkbox"/>	HELENE 2000
<input type="checkbox"/>	Sep. 15, 2000 to Sep. 25, 2000
<input type="checkbox"/>	GORDON 1994
<input type="checkbox"/>	Nov. 8, 1994 to Nov. 21, 1994
<input type="checkbox"/>	GILBERT 1988



Key risks/vulnerabilities/challenges -

- Climate Change
 - Changed rainfall patterns
 - Increased drought and floods
 - Fewer Hurricanes, but wetter and stronger
 - The Sea level will rise
 - The sea will become more acidic
 - This will probably happen in the tropics before the rest of the world. Early Climate Departure for the Caribbean region starting with Jamaica

Dependence of the economy on natural resources

- If beach erosion remains as it was in 2011, then over ten years, beaches in Negril, Montego Bay & Ocho Rios will lose value of **US\$19 million annually**.
- If reefs degrade more, increased erosion will increase the loss to **US\$33 million**.
- Erosion could reduce visitation by 9,000 to 18,000 stopovers per year; costing the industry between **US\$9 & US\$19 million** annually and costing the entire economy between US\$11 to US\$23 million.

■ Kushner, B., P., Edwards, L. Burke, and E. Cooper. 2011. *Coastal Capital: Jamaica. Coral Reefs, Beach Erosion and Impacts to Tourism in Jamaica. Working Paper. Washington, DC: World Resources Institute.*

Ecological Economics

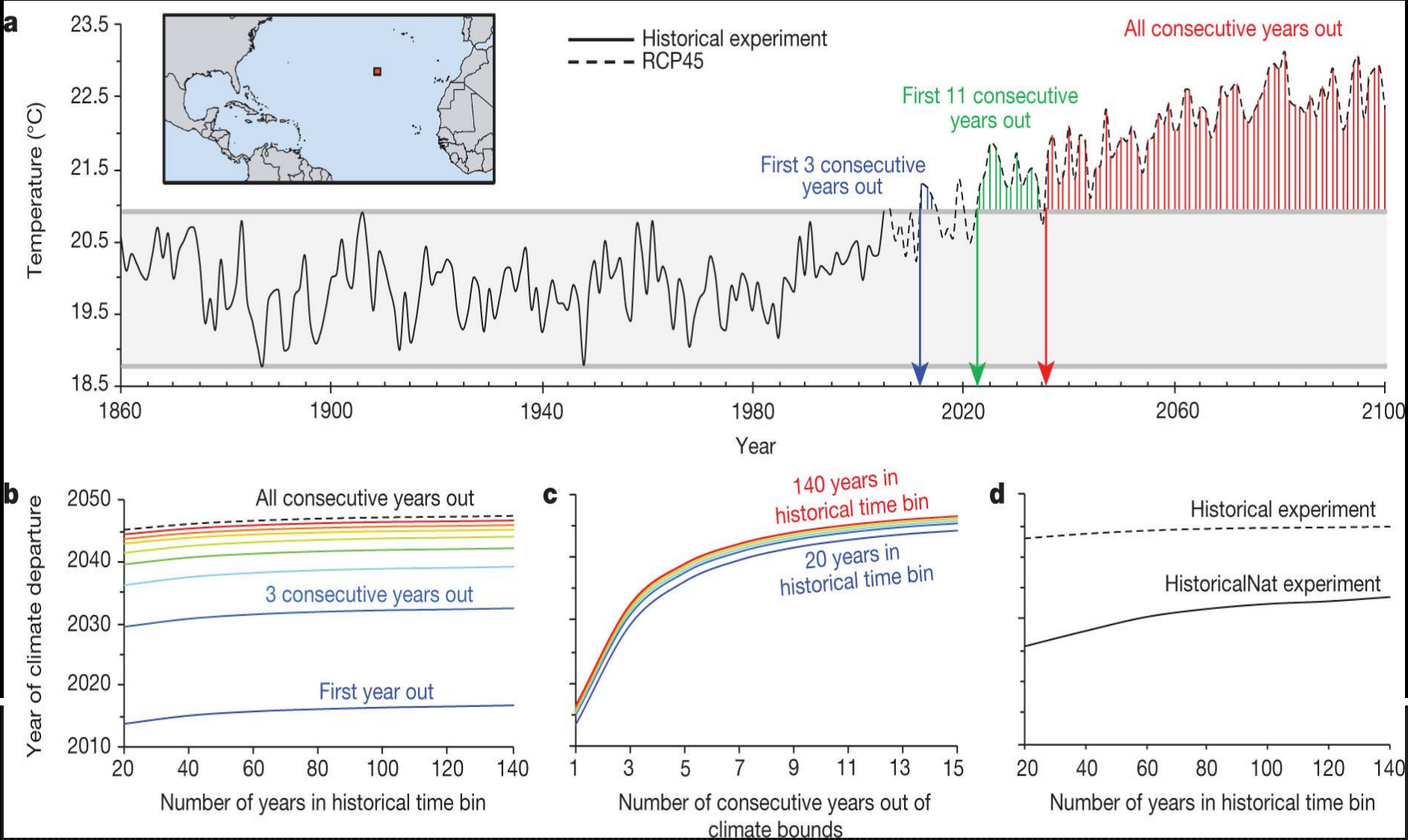
- **Species of economic importance**
 - Crops, pollinators, trees, food, pests, disease vectors
 - Coral Reefs, Mangroves, Seagrasses
- **Ecosystem Services**
 - High quality Water
 - White Sand
 - Landscapes and Seascapes
 - Land and Soils; provision & conservation
 - Nurseries for Fish
 - Conservation of coastline

But why worry?

- Why worry if it will be warmer by a few degrees C in 2100 or 2050?
- We should worry about the present
 - *“Global mean ocean pH moved outside its historical variability in 2008 (± 3 years s.d.).”*
Mora et. al.

Raven, J. A. et al. (eds). Ocean Acidification due to Increasing Atmospheric Carbon Dioxide (Royal Society, 2005).
Zeebe, R. E., Zachos, J. C., Caldeira, K. & Tyrrell, T. Carbon emissions and acidification. Science 321, 51–52 (2008).

Estimating the projected timing of climate departure.



Climate Departure: Results

- *Global* mean of 2047 (± 14 years s.d.) for near-surface air temperature with ‘business-as-usual’. Since this is the mean about half the world will depart *before 2047*
- **Unprecedented climates will occur earliest in the tropics & low-income countries,**

How can we be sustainable?

- **Nature:**
 - Take care of the coast, the forests & the sea.
 - Find out the value of our resources
- **Economy:**
 - Energy – we need cheaper, *sustainable* sources & increased efficiency
 - Businesses should assess their risks & develop continuity plans
- **Wellbeing:**
 - Increase knowledge and improve training
- **Society:**
 - Improve physical planning & building techniques

What is ISD doing?

- Zero Energy Building
 - Generate more energy than it consumes
 - Be able to withstand major tropical cyclones
 - Multi-purpose building
 - A model to emulate the design, building use & management
- UCSIS degree
 - Working with other SIDS universities to produce online courses on Climate Change

What is ISD doing?

- Enhancing Knowledge and Application of Comprehensive Disaster Management (CDM)
 - Cataloguing hazards, Exposure & Vulnerability
 - Estimating Risk due to earthquakes
 - Producing material for Small and Medium sized enterprises (SMEs) to increase their resilience to disaster and climate risk

What is ISD doing?

- Working with the DOGG
 - Vulnerability of Livelihoods in tourism to CC
 - Helping to increase community resilience to floods
- Economic Valuation of Natural Resources
 - Estimating the economic values of Protected Areas
 - Advising Government of Jamaica on how to make economic valuation part of the Environmental Impact Assessment Process

